

A NEW SPECIES OF AGABUS FROM THE DEATH VALLEY REGION OF CALIFORNIA (COLEOPTERA: DYTISCIDAE)

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Agabus rumppi Leech, NEW SPECIES

A species resembling large, dark examples of *A. lutosus* LeConte, but more elongate. Males can be traced to couplet 21 in Fall's key (1922), where they will not fit either choice since the protarsus is broad, but the anterior claw is not dentate in the sense of *A. lutosus*. Females trace to couplet 13, where there is a multiple choice based on male tarsal characters.

HOLOTYPE.—Male, from "2.7 mi. E. of Death Valley Junction (Inyo co.), Calif., el. 2200', V-18-1958. c-3110. Collection of N. L. Rumpp." In the California Academy of Sciences, Entomology.

Length 8.6 mm., width 4.6 mm. Form elongate oval, elytra widest at middle of length. Head piceous, clypeus yellowish-brown, labrum rufescent as are two occipital spots, one on each side of median line. Pronotum piceous, narrowly rufescent along all four margins, with overall faint aeneous luster as on head. Elytra brown, yellowish-brown laterally and apically (the elytra of the holotype are discolored in part, perhaps because of an injury during the pupal stage; the right elytron has a large irregular yellowish area from the middle at base to the suture discally, while the left has two small elongate yellowish marks). Undersurface piceous; antennae, palpi, tarsi and tibiae pale yellowish-brown, outer segments of palpi and femora posteriorly rufopiceous; epipleura brown medially, pale along each side; abdominal sternites pale to dark rufopiceous. *Note*: the holotype is slightly teneral.

Head with meshes of surface reticulation small, of irregular sizes and shapes, most with one or more minute punctures. *Pronotum* with reticulation as on head but more lightly impressed, meshes at sides smaller; lateral marginal bead narrow (about as wide as base of eleventh antennal segment), of even width throughout; line of coarse punctures paralleling front margin continuous, punctures largest and most irregularly spaced near middle; basal line of punctures interrupted, no punctures discally in front of scutellum. *Elytra* with a sutural, a discal and three lateral lines of coarse punctures; surface sculpture consisting of lightly impressed tiny, nearly round meshes, which become uneven in sizes and shapes discally; many have each a small central puncture. *Protarsi* broad (fig. 2); anterior claw with small blunt tooth at base (fig. 3), widest just before middle, curving to a fine point apically; posterior claw regularly narrowing to apex, only three-quarters as long as anterior claw. *Mesotarsi* two-thirds as broadly dilated as anterior tarsi, fifth segment very long (fig. 1). First three segments of pro- and mesotarsi with hairs (except marginal ones) dilated apically into rather large rounded palettes, as in *A. lutosus* and *A. griseipennis* LeConte; fourth segment of mesotarsi with pad of short stiff setae only. *Hind tibiae* without row of punctures along inner margin. *Prosternal process* narrow, as wide as a mesotrochanter, finely margined almost to the acuminate apex, arcuately convex in cross section. Least distance between middle coxae and metacoxal plates less than half length of latter, measured along same line. *Aedeagus* of genitalia bifid apically in lateral view, parameres densely hairy on inner side (figs. 4, 6).

ALLOTYPE, female, same data as for holotype, but with Mr. Rumpp's collecting number c-3110 a. In the California Academy of Sciences, Entomology.

Length 7.9 mm., width 4.7 mm. Head and pronotum colored as in holotype; elytra brown, yellowish-white at sides in anterior half, yellowish-brown across base. Undersurface colored as in holotype but paler (probably because the specimen is more teneral), femora not tinged with rufopiceous. Elytra with reticulation coarse

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and deep, the meshes strongly longitudinal baso-medially, more nearly rounded in apical half and laterally, much more lightly impressed apically and in apical half near lateral margin.

PARATYPES, 1 male, 2 females with same data as holotype except as follows: male, collection no. c-3110 b, females c-3110 d, c-3110 e. All in the California Academy of Sciences, except for one female deposited in the U. S. National Museum, Washington, D. C.

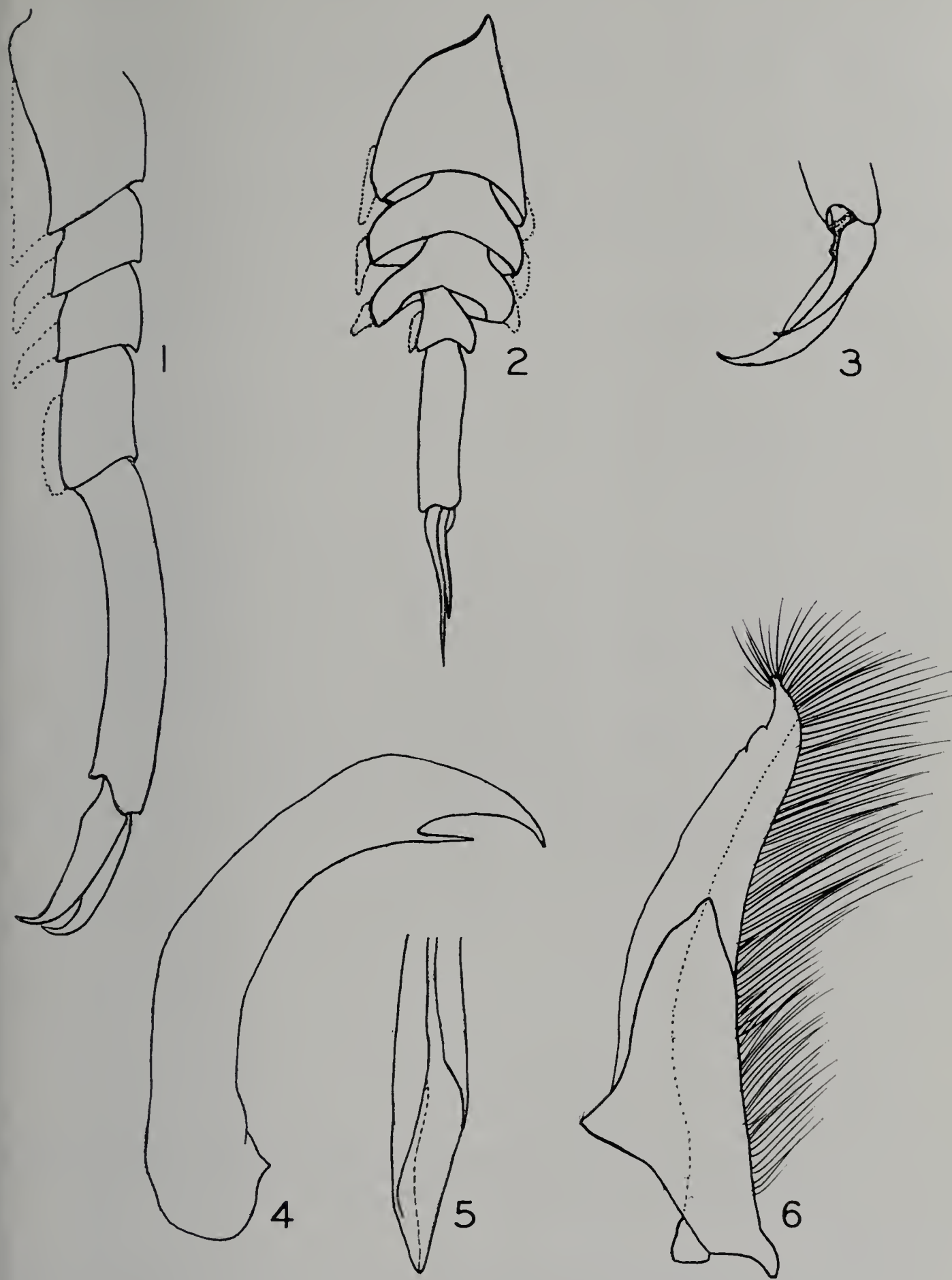
Additional specimen. 1 female, same data as types, number c-3110 c.

Variation. There is some variation in coloration, especially of the ventral surface, because all five specimens in the type series are teneral, the holotype the least so. The allotype is the only female to show a well defined pale area across the elytral bases. The non-paratypic female is fully matured and colored. It has the hind margins of the femora tinged with piceous as in the type, but the elytra are pale reddish-brown, palest laterally; it is also larger and proportionately narrower than the other specimens, i.e. length 9.4 mm., width 4.9 mm.

Discussion. In all characters other than size, and the protarsal claws of the male, *A. rumppi* is most similar to *A. lutosus* and *A. griseipennis*; all three have the aedeagus of the male bifid apically in profile. Judging by the non-paratypic female, color will not distinguish it from LeConte's species, and it is probable that a larger series would show small examples of a size comparable with large *A. lutosus*. Since all but the above female were teneral when taken in May, the latter may be an overwintered specimen.

In my key to the California species of *Agabus* (in Leech and Chandler, 1956) both sexes of *A. rumppi* will trace to couplet 17; the front tarsi of the male are very broadly dilated, as in *A. lutosus* and *A. griseipennis*, but the anterior (inner) tarsal claw is not toothed medially or apically. In Fall's key (1922) the male will trace either to couplet 21 or to couplet 29, depending on one's interpretation of couplet 20, where the choice is "Meshes of elytral reticulation more or less irregular and unequal, at least baso-medially . . . 21" as against "Meshes of elytral reticulation very minute, more rounded, and everywhere nearly equal . . . 29." As a matter of fact this is not an easy choice. As I have stated earlier, in the male of *A. griseipennis* the meshes are usually small, rounded and equal throughout, or of slightly irregular and uneven shapes near the suture at the bases of the elytra. In the male of *A. lutosus lutosus* ". . . the meshes are small, and either rounded and nearly equal except basally near the suture, or of unequal shapes and sizes almost throughout (type), or intermediate between these conditions. In a series of over 300 males . . . about seventy-five per cent have the meshes equal. . . ." (Leech, 1942, p. 132.) Yet Fall ran both species to couplet 21. If *A. rumppi* is taken to 21 it agrees with the first choice in its very widely dilated front tarsi with the basal segment scarcely as wide as the second, but differs in that the anterior claw is not toothed except minutely at the base (fig. 3). The female cannot be traced beyond the second half of couplet 13 of Fall's key, since the next choices are based on male tarsal characters.

In the male of *A. rumppi* the anterior protarsal claw is a little longer than the fifth protarsal segment, simple, with a tiny tooth-like protuberance at the extreme base (fig. 3). In *A. lutosus* and *A. griseipennis* it is only three-fifths as long as the fifth protarsal segment, has a rather similar basal



FIGURES 1-6. Structures of the male of *Agabus rumppi*, new species. 1—Profile of mesotarsus, extent of hairy pads and setae shown by dotted lines. 2—Dorsal view of left anterior tarsus. 3—Claws of right anterior tarsus, outer view, with anterior claw below. 4—Aedeagus in profile. 5—Apical third of the aedeagus, view of the dorsal side, i.e., the convex, top part of Figure 4. 6—Outer side of left paramere.

protuberance, but is strongly toothed at the mid-point or beyond (Leech, 1942, Pl. X, Figs. 11, 12; Leech and Chandler, 1956, Fig. 13:17 *d* and *e*).

A. rumppi shows an interesting chaetotaxy of the fourth mesotarsal segment in the male. From a longitudinally differentiated area on the bottom of the fourth segment there are several rows of short, stiff, thick setae arising from the inner (posterior) side, and a single row along the outer side. The setae of the inner rows are slanted across the segment, and to a lesser degree toward the apex, so that their tips, if extended a little, would touch those of the nearly vertical single row on the outer side.

An exactly comparable structure is found in males of *A. lutosus*, *A. griseipennis*, *A. erythropterus* (Say) and *A. ajax* Fall, species which, except for the first two, are not closely associated on the basis of other characters. A chaetotaxy of a similar but less developed type (a single row of setae on each side) occurs in the males of *A. arcticus* (Paykull), *A. anthracinus* Mannerheim, *A. browni* Leech and *A. austini* Sharp; in a rudimentary form it may be seen in *A. strigulosus* LeConte, *A. ambiguus* (Say) and *A. audeni* Wallis.

Mr. Rumpp has given to me the following information about the type locality, from his field notes. "The beetles were gotten from a small stream, either at the edge of it or well into it. This stream is a continuation of Carson Slough which goes south through, and drains, Ash Meadows. The actual location was inside California, but the source of the slough is a number of springs further north in the Nevada region of Ash Meadows. The elevation at this spot is only a few feet above 2200'. This stream is intermittent, by this time of the year it is usually dry. . . . On this basis it may be assumed that the *Agabus* is native of the stream in Ash Meadows, and its distribution therefore may include a portion of Nye Co., Nevada as well as Inyo Co., California."

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